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09/787,471	03/16/2001	Dieter Keller	5029-30 PUS	2528

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EXAMINER

FONTAINE, MONICA A

ART UNIT

PAPER NUMBER

1732

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/787,471

Applicant(s)

KELLER, DIETER

Examiner

Monica A Fontaine

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-21 and 23-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-21 and 23-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

This office action is in response to the Amendment filed 3 March 2003.

The following rejections have been overcome:

- A. 35 USC 112 (2nd): Claims 27-32
- B. 35 USC 102(e) as anticipated by Berghoff (U.S. Patent 6,254,378): Claims 17 and 27
- C. 35 USC 103(a): all previous rejections regarding Claims 18-32

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakagawa et al. (U.S. Patent 5,560,939). Nakagawa et al., hereafter "Nakagawa," show that it is known to have an apparatus for injection-compression molding of a molded part (Column 3, lines 31-41), comprising a mold including first and second plates having opposing end faces defining a mold parting plane for opening and closing the mold, wherein said opposing end faces have a first negative form of the molded part to be produced and a gate through which a molding composition is introducible (Column 4, lines 5-17; Column 9, lines 44-49), and a mold insert having a second negative form of the molded part to be produced and arranged in said mold

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(Column 4, lines 13-19). Nakagawa does not specifically show the use of screw drive assemblies to drive either the first and second mold plates or the mold insert; he uses hydraulic driving assemblies (Column 8, line 29 – Column 9, line 5). However, Nakagawa states that other driving assemblies may be used to move the mold insert, for example a screw assembly (Column 12, line 16-22). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a screw assembly to drive both the first and second plates, as well as the mold insert, using a screw drive assembly in order to provide the same relative movement using different machinery.

Regarding Claim 23, Nakagawa shows the apparatus as claimed, including an apparatus further comprising a die arranged in one of said first and second plates having a first negative form, wherein a drive is connected to said die (Column 4, lines 5-8; Column 8, lines 30-37). Nakagawa does not specifically show the use of screw drive assemblies to drive either the first and second mold plates or the mold insert; he uses hydraulic driving assemblies (Column 8, line 29 – Column 9, line 5). However, Nakagawa states that other driving assemblies may be used to move the mold insert, for example a screw assembly (Column 12, line 16-22). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a screw assembly to drive both the first and second plates, as well as the mold insert, using a screw drive assembly in order to provide the same relative movement using different machinery.

Regarding Claim 24, Nakagawa shows the apparatus as claimed as discussed above, including heating elements in the first and second plates (Column 9, lines 53-59), meeting applicant's claim.

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Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakagawa, in view of Wakebe et al. (U.S. Patent 5,310,331). Nakagawa shows the apparatus as claimed as discussed above, but does not show the use of a first screw drive assembly comprising a plurality of screw drive assemblies connected to one of said first and second plates. Wakebe et al., hereafter "Wakebe," show that it is known to have an apparatus wherein a first threaded screw drive assembly comprises a plurality of screw drive assemblies connected to said one of said first and second plates (Column 5, lines 7-20). The examiner notes that although the plurality of screws are not attached to one of said first and second plates, the concept of operating a plurality of screws with one screw drive is hereby known. Nakagawa and Wakebe are combinable because they are concerned with a similar technical field, namely, that of molding machines having at least one drive assembly which moves a mold part. It would have been obvious to one of ordinary skill in the art at the time the invention was made to connect Wakebe's plurality of screws in a first drive assembly to one of Nakagawa's first and second plates in order to move the plates as efficiently as possible.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakagawa, in view of Langos et al. (U.S. Patent 5,975,881). Nakagawa shows the apparatus as claimed as discussed above, but does not show using a third drive assembly. Langos et al., hereafter "Langos," show that it is known to have an apparatus further comprising at least two separate drive units that each operate a mold plate (Column 2, lines 8-12). Nakagawa and Langos are combinable because they are concerned with a similar technical field, namely, that of molding machines having at least two drive assemblies. It would have been obvious to one of ordinary

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skill in the art at the time the invention was made to operate each of Nakagawa's plates with its own drive assembly, as in Langos, in order to move the plates as efficiently as possible.

Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakagawa, in view of Hehl (U.S. Patent 5,622,737). Nakagawa shows the apparatus as claimed as discussed above, but does not show the use of a spindle or a spindle nut. Hehl shows that it is known to have an apparatus wherein the threaded screw drive comprises (Claim 20) a spindle nut (Column 6, line 4) and a threaded spindle (Column 6, line 3). Nakagawa and Hehl are combinable because they are concerned with a similar technical field, namely, that of molding machines having at least two drive devices. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Hehl's spindle nut or threaded spindle in Nakagawa's molding machine in order to provide easily-guided motion for each plate.

Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakagawa, in view of Aoki (U.S. Patent 3,712,786). Nakagawa shows the apparatus as claimed as discussed above, but does not show the inclusion of a planetary gear mechanism or the inclusion of an ejector in the drive assembly. Regarding Claim 25, Aoki shows that it is known to have an apparatus where in a gear mechanism is a planetary gear mechanism (Column 2, lines 11-23; Figure 1). Nakagawa and Aoki are combinable because they are concerned with a similar technical field, namely, that of molding machines having a threaded drive assembly. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Aoki's planetary gear mechanism in Nakagawa's drive assembly in order to increase the overall efficiency of the machine. Regarding Claim 26, Aoki shows that it is known to have an apparatus further comprising at least one ejector arranged in the threaded screw drive assembly

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(Column 2, lines 61-68). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include Aoki's ejector in Nakagawa's drive assembly to simplify product removal.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakagawa.

Nakagawa shows that it is known to carry out a method for injection-compression molding a molded part (Column 3, lines 31-41) using a mold having first and second plates with opposing end faces defining a mold parting plane for opening and closing the mold, the opposing end faces having a first negative form of the molded part and a gate through which molding composition is introducible (Column 4, lines 5-17; Column 9, lines 44-49), and a mold insert having a second negative form of the molded part to be produced and arranged in the first and second plates (Column 4, lines 13-19), said method comprising the steps of a) moving the first and second plates to a closed position and forming a cavity between the first and second plates and the mold insert (Column 4, lines 5-18), b) injecting a molding composition into the cavity (Column 9, lines 44-48), c) moving the mold insert having the second negative form of the molded part to be produced while the first and second plates are held in the closed position to reduce the size of the cavity and compress the molding composition in the cavity (Column 9, line 60 – Column 10, line 7), and d) controlling the movement of the first and second plates and the mold insert in steps a) and c) in dependence on a process parameter (Column 9, lines 57-65). Nakagawa does not specifically show the use of screw drive assemblies to drive either the first or second mold plates or the mold insert; he uses hydraulic driving assemblies (Column 8, line 29 – Column 9, line 5). However, Nakagawa states that other driving assemblies may be used to move the mold insert, for example a screw assembly (Column 12, lines 16-22). It would have been obvious to one of

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ordinary skill in the art at the time the invention was made to use a screw assembly to drive both the first and second plates, as well as the mold insert, using a screw drive assembly in order to provide the same relative movement using different machinery

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakagawa, in view of Ten Vaarwerk (U.S. Patent 5,328,347). Nakagawa shows the process as claimed as discussed above, but does not show controlling the movement of the first and second screw drive assemblies in dependence on a pressure present in the mold. Ten Vaarwerk shows that it is known to carry out a process wherein movement of the first and second screw drive assemblies is controlled in dependence on a pressure present in the mold (Column 9, lines 7-10). Nakagawa and Ten Vaarwerk are combinable because they are concerned with a similar technical field, namely, that of molding plastic materials. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Ten Vaarwerk's pressure sensing process to control the movement of Nakagawa's plates in order to prevent over- or under-pressurizing the mold cavity.

Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakagawa, in view of McNally (U.S. Patent 6,206,676). Nakagawa shows the process as claimed as discussed above, but does not show the use of power consumption of the driving motor or force on the driving motor to control the plate movement. McNally shows that it is known to carry out a method wherein positioning of mold plates is controlled by appropriate programming of the overall drive system (Column 9, lines 26-30). Nakagawa and McNally are combinable because they are concerned with a similar technical field, namely, that of molding processes using screw drive units. It would have been obvious to one of ordinary skill in the art

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at the time the invention was made to (Claim 29) control the movement of the first and second threaded screw drive assemblies in dependence on a power consumption of a motor driving the respective first and second threaded screw drive assemblies and (Claim 30) control the movement of the first and second screw drive assemblies in dependence on a force on the respective first and second threaded screw drive assemblies in order to make use of a readily-available system parameter that can be directly related to plate movement.

Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakagawa, in view of Laing et al. (U.S. Patent 5,800,750). Nakagawa shows the process as claimed as discussed above, but does not show movement of the plates in step-by-step fashion in increments of 1 micrometer. Regarding Claim 31, Laing et al., hereafter "Laing," show that it is known to carry out a method wherein moving the mold insert via a step-by-step motion (Column 6, lines 63 – Column 7, line 8). It is noted that although Laing refers to increments of time, it can be assumed that increments of length, such as the instantly claimed less than 1 micrometer (Claim 32), would lead to analogous conclusions about mold insert movement. Nakagawa and Laing are combinable because they are concerned with a similar technical field, namely, that of molding processes using threaded screw drives. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Laing's incremental monitoring strategy to observe Nakagawa's molding operation in order to obtain practically continuous analysis of mold plate movement.

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Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents are cited to further show the state of the art with regard to injection compression molding and drive assemblies in general:

U.S. Patent 5,352,394 to Fujita et al.

U.S. Patent 5,536,166 to Schad


U.S. Patent 5,863,474 to Ito et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica A Fontaine whose telephone number is 703-305-7239. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill L. Heitbrink can be reached on 703-308-0673. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9310 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

maf
May 16, 2003


JILL L. HEITBRINK
PRIMARY EXAMINER
ART UNIT 1732
5/19/03